Pain Caused by a Dental Implant Impinging on an Accessory Inferior Alveolar Canal: A Case Report

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This report presents a case history of intractable facial pain following the placement of a posterior mandibular implant. The pain was resistant to all medical management, but a cone beam computed tomography (CBCT) scan showed that the implant impinged on an unusual accessory inferior alveolar nerve. The decision to remove the implant led to significant pain reduction. This clinical example underscores the need for scrupulous imaging prior to implant placement. *Int J Prosthodont 2013;26:125–126. doi: 10.11607/ijp.3191*

Osseointegrated dental implants were formally introduced in 1982 and are now used in routine treatment planning for the restoration of depleted or missing dentitions.[1] Clinical protocols and technical advances readily permit the use of implants in diverse orofacial locations, including posterior mandibular sites. In spite of their significantly high success rates, implant treatments remain technique sensitive, and, as with all surgery, may be accompanied by complications. As a result, pain may be an inevitable consequence following most types of invasive surgery but is usually successfully controlled with systemic analgesia. While most postoperative pain is transient and resolves over time, persistent pain is rare and may suggest neural involvement.[2]

The prevalence of inferior alveolar nerve injury following implant surgery in the mandible has been reported to be as high as 13% in early reports,[3] although this figure has been reduced dramatically as a result of better and routine imaging technology. Given the number of implants placed, a thorough awareness of the local anatomy is needed to minimize complications. However, this can be very difficult if the anatomy is abnormal, eg, if the presence of an inferior accessory alveolar nerve (IAN) that is contained within the inferior alveolar canal (IAC) and appears as two radiopaque tramlines on a conventional radiograph is found. The literature suggests multiple cases of a second canal, and the frequency has been reported to be as low as 1%.[4] Moreover, since anatomical variants of the IAC are rarely detected by conventional radiography, the use of computed tomography (CT) offers greater accuracy, although it does deliver a higher radiation dose to the patient and is more expensive. Cone beam computed tomography (CBCT) has been recently advocated in an attempt to both reduce the radiation dose and provide higher spatial resolution.[5]

The purpose of this case report is to highlight an unusual case of an accessory inferior dental canal and emphasize the relevance of thorough planning prior to implant placement to reduce complications.

Materials and Methods

A 51-year-old woman presented with a burning pain localized to the mandibular left second molar region following placement of three implants in the mandibular left quadrant in 2009. The attraction of reduced professional fees associated with dental tourism had led her to seek treatment abroad, where traditional imaging was employed. Clinical examination revealed three implants in the mandibular left first premolar, first molar, and second molar positions. All implants were immobile and intact with no signs of pathology and were not tender to percussion. The implants and surrounding anatomy were assessed by CBCT (Fig 1).

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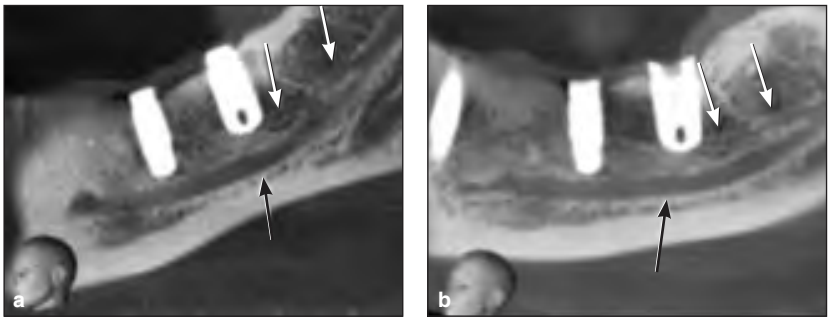

Fig 1 Parasagittal CBCT slices through the left mandible. **(a)** An accessory canal (*white arrow*) branching off the IAC (*black arrow*); **(b)** All three implants with the accessory canal leading to the distal implant.

An accessory canal was seen branching off the inferior dental nerve at the point where the mandibular left third molar would be; this aberrant canal appeared to head toward the apex of the most distal implant, affecting only the mandibular left second molar implant.

Results

Following discussion with the patient, it was decided that removal of the most distal implant was necessary. However, no promises of pain relief were given since traumatically induced nerve damage of undetermined magnitude may be associated with unpredictable sequelae. Removing a well-osseointegrated posterior implant proved to be rather challenging and was achieved with a combination of trephining and gutter bone removal with a conventional rosehead bur. Healing was uneventful and symptoms of pain gradually decreased. This subjectively determined symptomatic improvement was sustained at a 3-month follow-up appointment. Sensory deficits that last longer than 3 months are likely to be permanent, whereas if there is a positive response within this time frame then the outcome is likely to be promising.[6]

Discussion

Implants are increasing in popularity because of their high success rates. However, meticulous planning is essential to reduce the chance of complications. Patients should be informed of all potential risks regardless of how remote.

Variations in the anatomy of the IAC are extremely infrequent. Fine canal bifurcations can rarely be picked up by conventional radiography; greater accuracy and resolution can be obtained with a CBCT scan.

Conclusion

It is currently not a legal requirement in Hungary (where the implants were placed) or in the United Kingdom to have a CBCT scan prior to implant placement, but this case suggests that it may be desirable to seek routine CBCT imaging when posterior mandibular implant placement is planned. CBCT imaging may sound extreme in cases where traditional imaging shows optimal anatomical host sites with favorable anatomical locations, but use of CBCT as part of the workup would minimize the risk of IAN damage and potentially help identify any infrequent anatomical variations, as described above.

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